

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

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of URBAN ECONOMY in KHARKIV**

Methodological guidelines
for practical work
on the subject

“FOREIGN LANGUAGE FOR SPECIFIC PURPOSES”

*(for 1–2-year full-time students education level “bachelor”
specialty 122 – Computer Sciences and 151 – System Engineering)*

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UNIT 1 Living with computers

A Computers: friend ...

People who have grown up with PCs and microchips are often called the digital generation. This is how some people answered when questioned about the use of computers in their lives.

1. I use an interactive whiteboard, like a large touchscreen monitor, at school I find computers very useful in education.

2. Assistive technology, for people with disabilities, has helped me a lot. I can hardly see, so I use a screen reader, a program that reads aloud onscreen text, menus and icons.

3. I have a GPS, Global Positioning System, fitted in my car. With this navigation system I never get lost. And the DVD recorder is perfect for my children's entertainment

4. This new HMD (head-mounted display) allows me to watch films, and enjoy virtual reality, the artificial environment of the latest video games.

5. The upgraded wireless network at my university is great: we can connect our laptops, PDAs and Wi-Fi cell phones to the network anywhere in the campus. Communication is becoming easier and easier.

B ... or foe?

Our society has developed technological dependence. When computers are down, our way of life breaks down: planes stop flying, telephones don't work, banks have to close.

Computers produce electronic waste, plastic cases and microchips that are not biodegradable and have to be recycled or just thrown away.

They are responsible for health problems, e.g. computer addiction, an inappropriate and excessive use of computers.

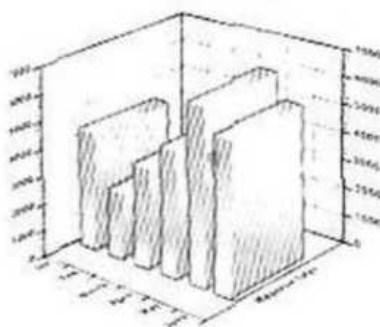
Cybercrime, crime committed with the help of computers, is creating serious problems.

Citizens may feel a loss of privacy because of unauthorized use of personal data or receiving unwanted electronic messages.

C Things we can do on the computer



A publication



A business graph



Web pages and email



Photo editing

A secretary: 'I use computers to do the usual office things like write letters and faxes, but what I find really useful is email. We are an international company and I send emails to our offices all over the world.'

A publisher: 'We use PCs to produce all sorts of texts in digital format. We publish e-books (electronic books) and interactive e-learning programs on CD, and we help a local company to design an online newspaper, displayed on the Web.'

A bank manager: 'We use financial software to make calculations and then generate graphs or charts. We also use a database to store information so that it can be easily searched.'

A home user: I like to retouch photos on my computer; I improve them by making a few touches and then save them on a CD. I also enjoy looking at music portals on the Web. I surf the Web every day and I often download files, I copy music files from the Net to my PC. '

EXERCISES

1.1 Complete these sentences with words from A opposite.

1. The _____ is a piece of software that interfaces with your PC and allows you, via keyboard commands, to get any text information read to you in synthetic speech.
2. A _____ - _____, as popularized by virtual reality, lets the user immerse him/herself in a synthetically generated environment.
3. An _____ is a touch-sensitive device where a special pen or your finger can act as a mouse.
4. Tony Adams is now the proud owner of a dark silver Vogue, complete with leather interior, _____ navigation, and a _____ with LCD TV screens.

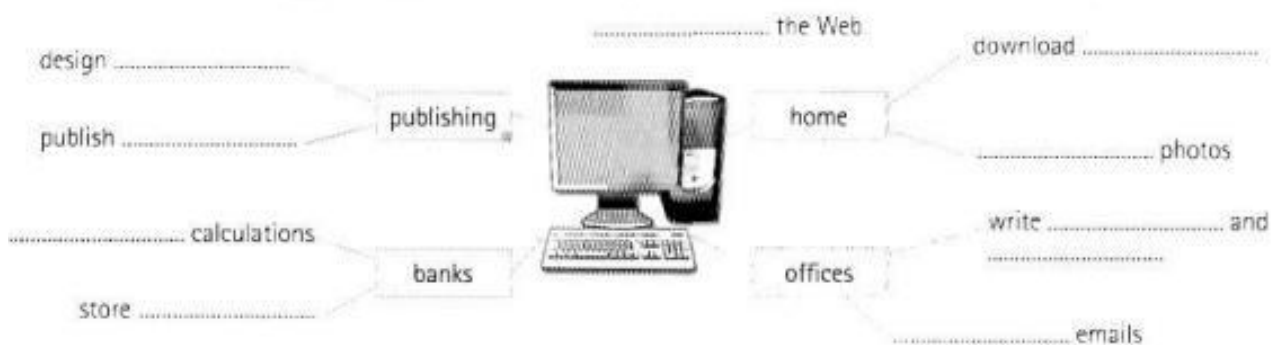
1.2 Which computer use in A do these pictures illustrate?



1.3 Read B opposite. What problem do these sentences refer to?

1. We are sorry to announce that most flights are delayed or cancelled.
2. He should go to a psychologist. He spends hours surfing the Web.
3. Technology changes so quickly that we have to scrap computers when they become obsolete.
4. I've been getting emails about offers for lots of different products.
5. My computer system has been broken into and some useful information has been destroyed.

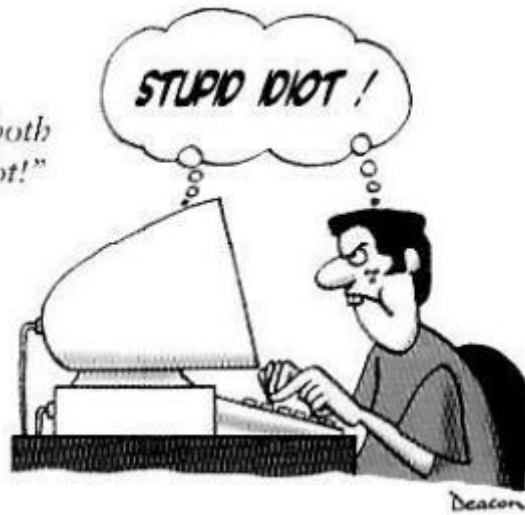
1.4 Some words often appear together in IT. Complete these computer uses with word partners from C opposite.



1.5 You and computers

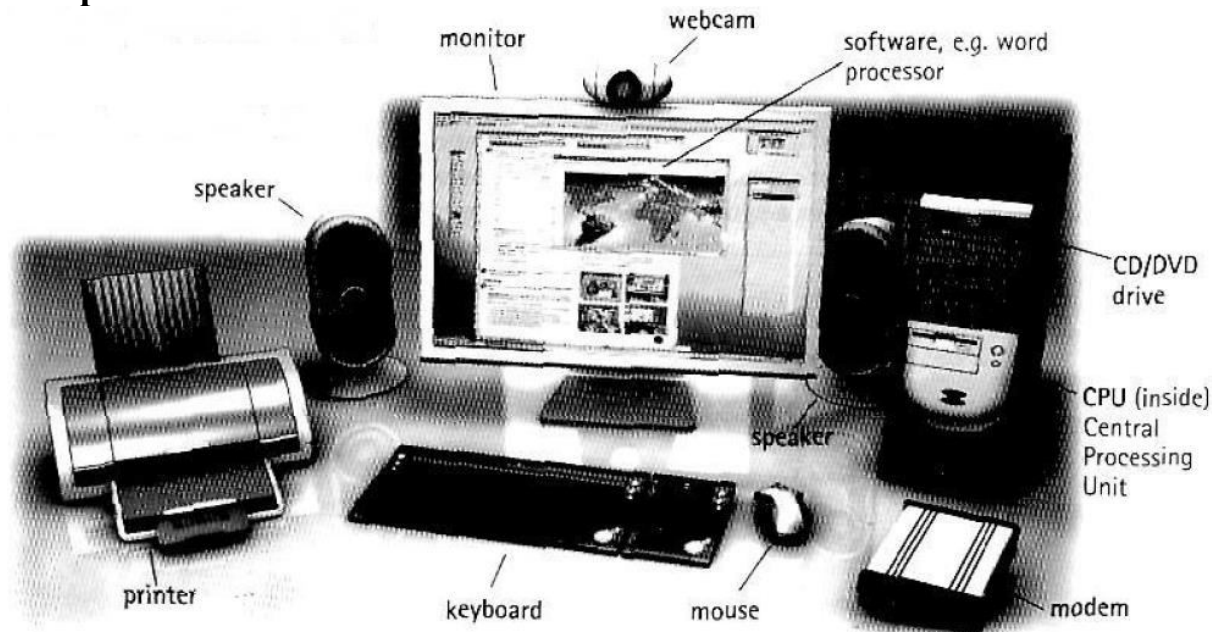
Make a list of the ways you use computers at work and in your free time.

*Computer and man both
thinking "Stupid Idiot!"*



UNIT 2 A typical PC

A Computer essentials



B Parts of a computer

A computer is an electronic machine that accepts processes, stores and outputs information. A typical computer consists of two parts: hardware and software.

Hardware is any electronic or mechanical part of the computer system that you can see or touch.

Software is a set of instructions, called a program, which tells a computer what to do. There are three basic hardware sections.

1 The **CPU** is the heart of the computer, a microprocessor chip which processes data and coordinates the activities of all the other units.

2 The main memory holds the instructions and data which are being processed by the CPU. It has two main sections: **RAM** (random access memory) and **ROM** (read only memory).

3 Peripherals are the physical units attached to the computer. They include:

Input devices, which let us enter data and commands (e.g. the keyboard and the mouse).

Output devices, which let us extract the results (e.g. the monitor and the printer).

Storage devices, which are used to store information permanently (e.g. hard disks and DVD-RW drives).

Disk drives are used to read and write data on disks.

At the back of a computer there are **ports** into which we can plug external devices (e.g. a scanner, a modem, etc.). They allow communication between the computer and the devices.

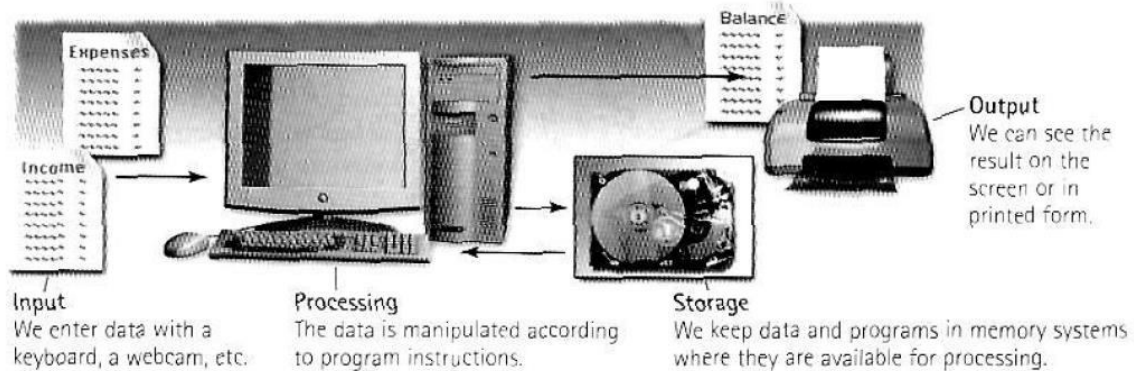


USB connector



USB ports

C Functions of a PC: input, processing, output, storage



EXERCISES

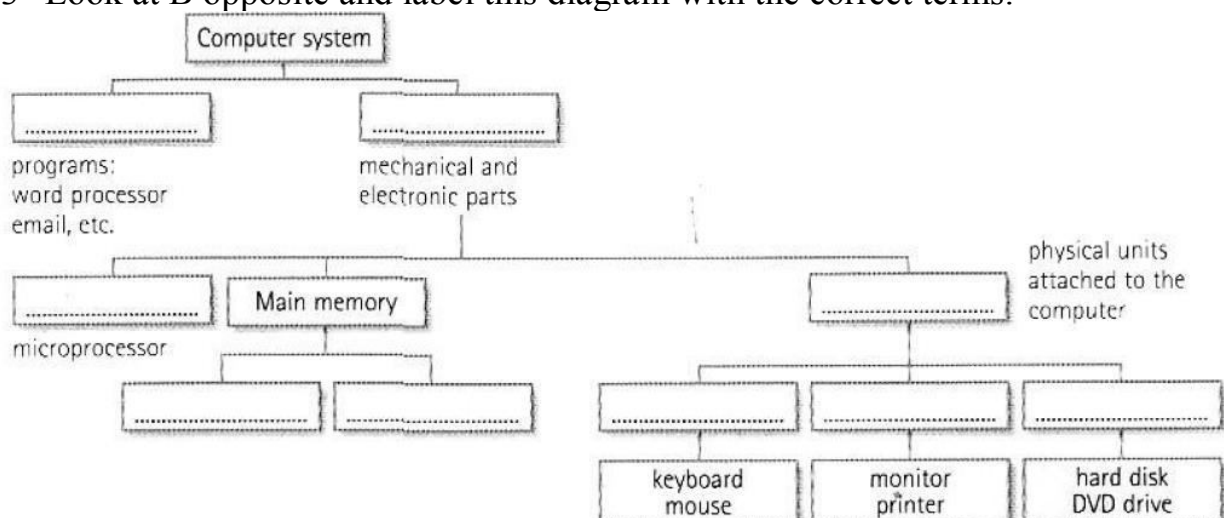
2.1 Look at A opposite. Read these quotations and say which computer essential they refer to.

1. 'Accelerate your digital lifestyle by choosing a Pentium at 4.3 GHz.'
2. 'Right-click to display a context-sensitive menu.'
3. 'You will see vivid, detailed images on a 17" display.'
4. 'This will produce high-quality output, with sharp text and impressive graphics.'
5. 'Use it when you want to let the grandparents watch the new baby sleeping.'
6. 'Press any key to continue.'

2.2 Match the terms with their definitions

- | | |
|-----------------|---|
| 1. CD/DVD drive | a any socket into which a peripheral device may be connected |
| 2. speaker | b device used to produce voice output and play back music |
| 3. modem | c mechanism that reads and/or writes to optical discs |
| 4. port | d device that converts data so that it can travel over the Internet |

2.3 Look at B opposite and label this diagram with the correct terms.



2.4 Complete the diagram and sentences below with words from C opposite.

Functions of computer

- 1 Computer is the visible or audible result of data processing - information that can be read, printed or heard by the user.
- 2 The CPU will process data as instructed by the programs you're running includes functions like calculating, sorting, editing, drawing and searching.
- 3 DVDs are expected to replace CDs as devices.
- 4 As a scanner, the Sigma-100 can be used to photographs as well as documents into the computer.

UNIT 3 Types of computer systems

A From mainframes to wearable computers

A **mainframe** is the most powerful type of computer. It can process and store large amounts of data. It supports multiple users at the same time and can support more simultaneous processes than a PC. The central system is a large server connected to hundreds of terminals over a network. Mainframes are used for large-scale computing purposes in banks, big companies and universities.

A **desktop PC** has its own processing unit (or CPU), monitor and keyboard. It is used as a personal computer in the home or as a workstation for group work. Typical examples are the IBM PC and the Apple Macintosh. It's designed to be placed on your desk. Some models have a vertical case called a tower.

A **laptop** (also called a **notebook PC**) is a lightweight computer that you can transport easily. It can work as fast as a desktop PC, with similar processors, memory capacity, and disk drives, but it is portable and has a smaller screen. Modern notebooks have a **TFT** (Thin Film Transistor) screen that produces very sharp images. Instead of a mouse, they have a touchpad built into the keyboard – a sensitive pad that you can touch to move the pointer on the screen.

They offer a lot of connectivity options: **USB** (Universal Serial Bus) **ports** for connecting peripherals, slots for memory cards, etc.

They come with **battery packs**, which let you use the computer when there are no electrical outlets available.

A **tablet PC** looks like a book, with an LCD screen on which you can write using a special digital pen. You can fold and rotate the screen 180 degrees. Your handwriting can be recognized and converted into editable text. You can also type at the detached keyboard or use voice recognition. It's mobile and versatile.

A personal digital assistant or **PDA** is a tiny computer which can be held in one hand. The term PDA refers to a wide variety of handheld devices, palmtops and pocket PCs.

For input, you type at a small keyboard or use a **stylus** - a special pen used with a **touch screen** to select items, draw pictures, etc.

Some models incorporate **handwriting recognition**, which enables a PDA to recognize characters written by hand. Some PDAs recognize spoken words by using **voice recognition** software.

They can be used as mobile phones or as personal organizers for storing notes, reminders and addresses. They also let you access the Internet via **wireless** technology, without cables.

A **wearable computer** runs on batteries and is worn on the user's body, e.g. on a belt, backpack or vest; it is designed for mobile or hands-free operation. Some devices are equipped with a wireless modem, a small keyboard and a screen; others are voice-activated and can access email or voice mail.

Exercise

3.1 Look at A opposite. Which type of computer do these descriptions refer to?

1. a hand-held computer which can be used as a telephone, a web explorer and a personal organizer.
2. a typical computer found in many businesses and popular for home use
3. a large computer used for intensive data processing and often linked to many terminals
4. a small computer that fits into items of clothing
5. a portable computer that can be closed up like a briefcase, but it can be as powerful as a desktop PC
6. a full-function PC, though it only weighs 1.2 kg – you can go to a meeting and write your notes on it, like a paper notepad; its screen mode can be changed from portrait to landscape

3.2 Look at the computer advertisement and find this information.

1. What type of computer is advertised?
2. What kind of screen does it have?
3. Which pointing device replaces the mouse?
4. What type of ports does it have for connecting cameras and music players?
5. What sort of power supply does it use?

3.3 Read this interview with Adam Hawkins, an IT manager, and complete it with words from the PDA section opposite.

Interviewer: What are the basic features of a PDA?

Adam: Well, a typical PDA is a (1)..... device that runs on batteries and combines computing, phone and Net capabilities.

Interviewer: And how do you enter information?

Adam: For input, you use a (2) or pen to write and make selections on a (3) ; they also have buttons for launching programs. Some models have a small keyboard. They may have a (4) system that reacts to the user's voice.

Interviewer: Do they need special software?

Adam: Yes, most of them run on *Windows Mobile*. Palmtops supported by Palm Inc. use *Palm OS*. Pen-based systems include (5) so you write on the screen and the computer recognizes your handwriting and inserts the appropriate letters.

Interviewer: What sort of things can you do with a PDA?

Adam: You can store personal information, take notes, draw diagrams and make calculations. Many PDAs can access the Net via (6)technology.

You and computers

- 1 Write down two benefits and two limitations of PDAs.
- 2 Explain in a paragraph how laptops can be beneficial to business people.
- 3 Write three examples of how tablet PCs can be used in the classroom.

UNIT 4 Input devices: type, click and talk!

A Interacting with your computer

Input devices are the pieces of hardware which allow us to enter information into the computer.



B The keyboard

A standard PC keyboard has various groups of keys.

- **Alphanumeric keys** - these represent letters and numbers, arranged as on a typewriter.
- A **numeric keypad** appears to the right of the main keyboard and contains numeric and editing keys; the Num Lock key is used to switch from numbers to editing functions.
- **Function keys** appear at the top of the keyboard and can be programmed to do special jobs.
- **Cursor keys** include 'arrow keys' which move the insertion point, and keys such as Home, End, Page Up, and Page Down, which let you move around documents.
- **Dedicated keys** are used to issue commands or produce alternative characters.

For example:

- **Ctrl** changes the functions of other keys (e.g. Ctrl + X cuts the selected text).
- **Caps Lock** sets the keyboard in 'CAPITALS' mode; it only affects letters.
- **Enter** (or **Return**) is pressed to select options from a menu or to start a new paragraph.
- **Backspace** deletes the character to the left of your current position.

C The mouse

A mouse is a hand-held device that lets you move a pointer (or cursor) and select items on the screen. It has one or more buttons to communicate with the PC. A scroll wheel lets you move through your documents or web pages. The pointer looks like an I-bar, an arrow or a pointing hand.

An optical mouse has an optical sensor instead of a ball underneath.

A cordless (wireless) mouse has no cable; it sends data via infrared signals or radio waves.

Mouse actions:

- to **click**, press and release the left button.
- to **double-click**, press and release the left button twice.
- to **drag**, hold down the button, move the pointer to a new place and then release the button.
- to **right-click**, press and release the right button; this action displays a list of commands.

D Voice input

Today you can also interact with your computer by voice with a **voice-recognition system** that converts voice into text, so you can dictate text directly onto your word processor or email program. You can also control your PC.' with voice commands; this means you can launch programs, open, save or print files. Some systems let you search the Web or chat using your voice instead of the keyboard.

Exercise

4.1 Look at A opposite. Which input device would you use for these tasks?

- 1 to play computer games
- 2 to copy images from paper into a computer
- 3 to read price labels in a shop
- 4 to select text and click on links on web pages
- 5 to enter drawings and sketches into a computer
- 6 to input voice commands and dictate text
- 7 to draw pictures or select menu options directly on the screen
- 8 to take and store pictures and then download them to a computer

4.2 Complete each sentence by choosing from the following devices: *touch screen*, *trackball*, *touchpad*, *webcam*.

- 1 A is a stationary device that works like a mouse turned upside down. You roll the ball with your hand to move the pointer on the screen.
- 2 Interactive are used in museums, information centres and Internet kiosks. You use your finger to point directly to objects on the screen.
- 3 A.....is used to send live video images via the Internet.
- 4 A is found on notebook PCs. You use it by pressing the sensitive pad with a finger.

4.3 Label the groups of keys with terms from B opposite. Then identify the keys described below.

- 1 It produces upper-case letters, but it does not affect numbers and symbols.

- 2 It removes the character to the left of the cursor or any selected text.
- 3 It works in combination with other keys, e.g. you press this key and C to copy the selected text.
- 4 It is used to confirm commands; in a word processor, it creates a new paragraph.

4.4 Look at C opposite. Complete these sentences with the correct 'mouse action'.

- 1 To start a program or open a document you on its icon - that is, you rapidly press and release the mouse button twice.
- 2 If you want to select a menu option, you just on the left button.
- 3 If you want to find the commands for a particular text, image, etc., you have to.....on it.
- 4 If you want to move an object, press the button and..... the object to the desired location.

You and computers

1. Read D opposite and make a list of the things you can do with a voice-recognition system.
2. What do you think of this idea? *Someday, we'll be talking to our PC naturally, like a friend.* Write down your opinions.

UNIT 5 Input devices: the eyes of your PC

A Scanners

Input devices such as scanners and cameras allow you to capture and copy images into a computer.

A **scanner** is a peripheral that reads images and converts them into electronic codes which can be understood by a computer. There are different types.

- A **flatbed** is built like a photocopier and is for use on a desktop; it can capture text, colour images and even small 3D objects.
- A **film scanner** is used to scan film negatives or 35 mm slides – pictures on photographic film, mounted in a frame.
- A **hand-held scanner** is small and T-shaped, ideal to capture small pictures and logos.
- A **pen scanner** looks like a pen; you can scan text, figures, barcodes and handwritten numbers.

Barcode scanner read barcodes on the products sold in shops and send the price to the computer in the cash register. **Barcodes** consist of a series of black and white stripes used to give products a unique identification number.

The **resolution** of a scanner is measured in **dpi** or dots per inch. For example, a 1,200 dpi scanner gives clearer, more detailed images than a 300 dpi scanner.

Most scanners come with **Optical Character Recognition** software. OCR allows you to scan pages of text and save them into your word processor; they can then be edited.

B Digital cameras

A **digital camera** doesn't use film. Photos are stored as digital data (bits made up of 1s and 0s), usually on a tiny storage device known as **flash memory** card. You can connect the camera or memory card to a PC and then alter the images using a program like Adobe Photoshop, or you can view the images on a TV set. Many printers have a special socket so that you can print images directly from a memory card or camera.

C Digital video cameras and webcams

Webcams (short of Web cameras) let you send and receive live video pictures through the Internet. They're primarily used for video conferences – video calls – but they can be used to record photos and video onto your hard disk.

The resolution of webcams is expressed in megapixels (million pixels). Webcams connect to the PC via a USB (universal serial bus) or FireWire port; they display video at 24 to 30 frames (pictures) per second. Some include a headset with a microphone and earpiece.

EXERCISE

5.1 Solve the clues and complete the gaps with words from A and B opposite.

1. Scanners and cameras are Devices used to transfer images into a format that can be understood by computers.
2. A lets you copy photos and printed documents into your PC.
3. It has become one of life's most familiar sounds – the beep of the supermarket till whenever a is scanned.
4. If you need to scan 35mm you should go for a dedicated 35mm film scanner which concentrates all its dots in tiny area.
5. This scanner has a resolution of 300 x 600
6. A scanner is small enough to hold in your hand.
7. A scanner is used to capture lines of text, barcodes and numbers.
8. Most digital cameras use flash cards to store photos.
9. scanners have a flat surface and take at least A4-sized documents.
10. To scan photographic negatives or slides you will need a scanner.

5.2 Decide if these sentences are *True* or *False*. If they are false, correct them.

1. The details detected by a scanner are not determined by its resolution.
2. A barcode scanner is a computer peripheral for reading barcode labels printed on products.
3. Scanners cannot handle optical character recognition.

4. A digital camera uses a light sensitive film instead of a memory card for storing the images.
5. A digital video (DV) camera is used to take still photographs.
6. Video editing software allows you to manipulate video clips on the computer.

5.3 Complete this advertisement with words from the webcam section of C opposite.
Having (1)..... with friends and family has never been easier or more enjoyable. You get the highest-quality audio and video, no matter which chatting solution you use. With the WebCam Live! Ultra, its CCD image sensor with 640 x 480 (VGA) resolution produces rich, vibrant colours. Combined with its (2)..... 2.0 Hi-Speed connection, the result is top quality, full-motion video at 30 (3)..... per second for all your web conversations, even in dimly-lit rooms. The WebCam Live! Ultra lets you do more. Let your voice be heard clearer than ever before with the included (4)....., unlike the built-in microphones in most other (5)..... take still pictures at up to 1.3 (6)..... resolution (interpolated), and enjoy the many great features that accompany the bundled award-winning WebCam Center software, such as motion detection, remote security monitoring, timelapse video capture and much more.

You and computers

1. Write one reason for using a scanner at home or at work.
2. Do you have a digital camera? Describe its basic features and the things you do with it.

UNIT 6 Output devices: printers

A Technical details

A printer is a device that prints your texts or graphics on paper

The output quality, or resolution, is measured in dpi or dots per inch.

The output on paper or acetate sheets is called printout or hard copy.

A program in your computer, called the printer driver, converts data into a form that your printer can understand.

The speed of your printer is measured in pages per minute(ppm).

In network, users can share a printer connected to a print server, a computer that stores the files waiting to be printed.

A print spooler stores files to be printed when the printer is ready. It lets you change the order of documents in the queue and cancel specific print jobs.

B Types of printers

A **dot-matrix printer** uses a group or matrix, of **pins** to create precise dots. A print head containing tiny pins strikes and inked ribbon to make letters and graphics. This **impact printing** technology allows shops, for example, to print multi-part forms such as receipts and invoices, so it's useful when self-copying paper is needed. It has two important disadvantages: noise and a relatively low resolution (from 72 to 180 dpi).

An **ink-jet** (also called bubble-jet) **printer** generates an image by spraying tiny, precise drops of ink onto the paper. The resolution ranges from 300 to 1,200 dpi, suitable for small quantities or home use.

A standard ink-jet has a three-colour **cartridges**, plus black cartridge. Professional ink-jets have five-colour cartridges, plus black ; some can print in wide format, ranging from 60 cm up to 5 meters (e.g. for printing advertising graphics).

Some ink-jet based printers can perform more than one task. They are called **multi-function printers** because they can work as a scanner, a fax and a photocopier as well as a printer. Some units accept memory cards and print photos directly from a camera.

A **laser printer** uses a laser beam to fix the ink to the paper. A laser works like a photocopier; a powder called toner is attracted to paper by an electrostatic charge and then fused on by a hot roller.

Laser printers are fast and produce a high resolution of 1,200 to 2,400 dpi, so they are ideal for business and for proofing professional graphics work.

Lasers use a **page description language** or PDL which describes how to print the text and draw the images on the page. The best-known languages are Adobe PostScript and HP Printer Control Language.

A professional **imagesetter** is a typesetting printer that generates very high-resolution output (over 3,540 dpi) on paper or microfilm. It's used for high-quality publications.

A **plotter** is a special type of printer which uses ink and fine pens held in carriage to draw detailed designs on paper. It's used in computer-aided design, maps, 3-D technical illustrations, etc.

EXERCISE

6.1 Complete these sentences with words from A opposite.

- 1 The differences in are noticeable: the more dots per inch, the clearer the image.
- 2 A print resolution of between 600 and 2,400 ensured that even text as small as 2 pt was legible.
- 3 Passengers with an electronic ticker will need a of ticket configuration or a boarding pass to be admitted to secured gate areas.
- 4 The key advance of recent years is printing speed: the latest generation of ink-jets prints black-and-white text at 15 (.....).
- 5 With appropriate software, you can view the images on a computer, manipulate them, or send them to a and produce excellent quality colour copies.
- 6 A is a dedicated computer that connects a printer to a network. It enables users to share printing resources.
- 7 A is a utility that organizes and arranges any documents waiting to be printed.
- 8 In computers, a is a program installed to control a particular type of printer.

6.2 Choose the most appropriate type of printer for these situations from the descriptions in B opposite.

- 1 a home user who wants to print text documents and family photographs
- 2 business people who need to print in large quantities at high quality in an office
- 3 engineers who want to make detailed line drawings
- 4 professional typesetters in desktop publishing (e.g. to publish catalogues and magazines)
- 5 a company that wants to print carbon copies of bills and receipts

6.3 Find terms in B opposite which correspond to these definitions.

- 1 a container that holds the ink in an ink-jet printer
- 2 powdered ink used in laser printers
- 3 small needles that press on the inked ribbon to make the characters on paper
- 4 printer technology that produces text and pictures by hammering pins against a ribbon and the paper
- 5 a language that tells a printer how to print a document
- 6 a peripheral which combines a printer, a fax machine and photocopying and scanning capability into one device.

You and computers

Describe the characteristics of the printer that you have or would have like to have at home or at work.

Give details about: type of printers, speed, resolution, ink cartridges, price and customer support.

UNIT 7 Output devices: display screens

A CRTs and LCDs

The screen of a computer is often known as the monitor, or VDU (visual display unit). Inside the computer, there is a video card which processes images and sends signals to the monitor.

When choosing a monitor, you have to take into account a few basics.

- Type of display – the choice is between a CRT or an LCD screen.

The Cathode Ray Tube of a monitor is similar to a traditional TV set. It has three electron guns (one for each primary colour: red, green and blue) that strike the inside of the screen, which is coated with substances called phosphors, which glow and create colours. CRTs are cheap, but they are heavy, can flicker and emit radiation.

- A Liquid Crystal Display is made from flat plates with a liquid crystal solution between them. The crystals block the light in different quantities to create the image. Active-matrix LCDs use TFT (thin film transistor) technology, in which each pixel has its own transistor switch. They offer better quality and take up less space, so they are replacing CRTs.
- Screen size - the viewing area is measured diagonally: in other words, a 17" screen measures 17 inches from the top left corner to the bottom right.
- Resolution - the clarity of the image depends on the number of pixels (short for picture elements) contained on a display, horizontally and vertically. A typical resolution is 1,024 x 768. The sharpness of images is affected by dot pitch, the distance between the pixels on the screen, so a dot pitch of 0.28 mm or less will produce a sharp image.
- Brightness - the luminance of images is measured in cd/m² (candela per square meter).
- Colour depth – the number of colours a monitor can display. For example, a VGA monitor produces 256 colours, enough for home use; a SuperVGA can produce up to 16.7 million colours, so is ideal for photographic work and video games.
- Refresh rate – the number of times that the image is drawn each second. If a monitor has a refresh rate of 75 Hertz (Hz), it means that the screen is scanned 75 times per second. If this rate is low, you will notice a flicker, which can cause eye fatigue.

B Big screens: plasma and projection TVs

1 'I sometimes use a video projector in my Geography lessons. I prepare audiovisual presentations on my laptop and then connect it to a front-screen projector which displays the images on a distant screen or white wall.'

2 'I use a portable DLP projector for my business presentations. This is a digital light-processing device which creates the image with millions of microscopic mirrors arranged on a silicon chip.'

3 'I am a home cinema enthusiast. I've set up a system with a DVD recorder, speakers for surround sound, and a rear projection TV, which has the video projector and the screen within a large TV box. It's a real cinema experience.'

4 'I've got a 52-inch plasma display and really enjoy its advantages: high-contrast images and bright colours, generated by a plasma discharge which contains noble, non-harmful gases. Gas-plasma TVs allow for larger screens and wide viewing angles, perfect for movies!'

EXERCISE

7.1 Read A opposite and then correct these false statements.

- 1 The images shown on a monitor are not generated by the video card.
- 2 All visible colors can be made from mixing the three primary colors of red, yellow and blue.
- 3 Typical CRT-based displays occupy less space than LCD displays.
- 4 Active-matrix LCDs do not use a technology called thin film transistor or TFT.
- 5 The size of the screen is measured horizontally.

7.2 Match each term with the correct definition.

1. phosphors
 2. LCD screen
 3. pixel
 4. dot pitch
 5. refresh rate
-
- a) the frequency at which a monitor renews its image, measured in Hz
 - b) a flat-panel display which works by emitting light through a special liquid
 - c) the space between a display's pixels
 - d) the smallest element in a displayed image
 - e) materials that emit light and produce colours when they are activated by an electron beam

7.3 Complete the technical specifications of this monitor with words from A opposite. Quick specs

The new Paintview XT-85 combines a television and a computer (1) in one display.

Type of display	Flat panel LCD
(2).....	19 inches
(3) Display	1,280 x 1,024 pixels
Dot pitch	0.294 mm
(4)	16.7 million colours
Contrast ratio	1,000:1
(5)	450 cd/m ²
Built-in TV tuner	Yes
Audio	Two 3-watt speakers and a 5-watt subwoofer, headphone jack

The Picture-in-Picture function allows you to watch more than one program at the same time and lets you adjust the size of each window.

UNIT 8 Processing

A The processor

The processor, also called the CPU or central processing unit, is the brain of your computer. In PCs, it is built into a single chip -a small piece of silicon with a complex electrical circuit, called an integrated circuit - that executes instructions and coordinates the activities of all the other units.

Three typical parts are:

- the control unit, which examines instructions from memory and executes them;
- the arithmetic and logic unit (ALU), which performs arithmetic and logical operations;
- the registers , high-speed units of memory used to store and control data.

The speed of a processor is measured in gigahertz (GHz). Thus, a CPU running at 4 GHz can make about four thousand million calculations a second. An internal clock sends out signals at fixed intervals to measure and synchronize the flow of data.

The main circuit board is known as the motherboard. This contains the CPU, the memory chips, expansion slots and controllers for peripherals, connected by internal buses, or paths, that carry electronic signals. For example, the front side bus carries all data that passes from the CPU to other devices.

Expansion slots allow you to install expansion cards which provide extra functions, e.g. a video card or a modem.

Laptops have PC cards, the size of a credit card, which add features like sound, memory and network capabilities.

B RAM and ROM

When you run a program, the CPU looks for it on the hard disk and transfers a copy into the RAM. RAM (random access memory) is temporary or volatile, that is, it holds data while your PC is working on it, but loses this data when the power is switched off.

However, ROM (read only memory) is permanent and contains instructions needed by the CPU; the BIOS (basic input/output system) uses ROM to control communication with peripherals, e.g. disk drives.

The amount of RAM determines the number of programs you can run simultaneously and how fast they operate. It can be expanded by adding extra RAM chips.

C Units of memory

The electronic circuits in computers detect the difference between two states:

ON (the current passes through) or OFF (the current doesn't); they represent these states as 1 or 0. Each 1 or 0 is called a binary digit or bit.

Bits are grouped into eight-digit codes that typically represent characters

(letters, numbers and symbols). Eight bits together are called a byte. For example, 01000001 is used for the character A. Computers use a standard code called ASCII for the binary representation of characters.

In order to avoid complex calculations of bytes, we use bigger units. A kilobyte (KB) is 1,024 bytes; a megabyte (MB) is 1,024 kilobytes; a gigabyte (GB) is 1,024 megabytes; a terabyte (TB) is 1,024 gigabytes. We use these units to describe the RAM memory, the operating capacity of disks and the size of a program or document.

EXERCISE

8.1 Look at A and B opposite. Then match the sentence beginnings (1-6) with the correct endings

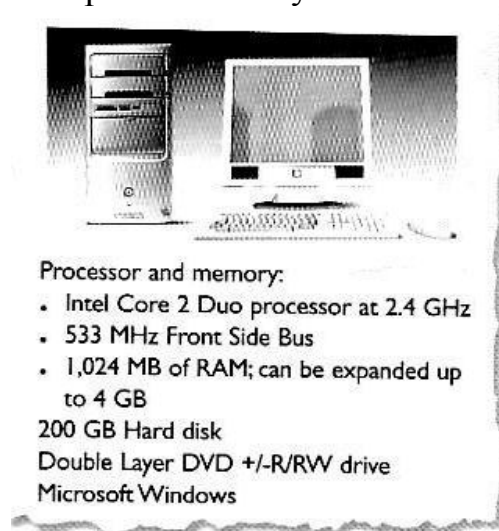
- 1 The CPU processes data and
- 2 The control unit is the part of the CPU that
- 3 The arithmetic and logic unit is able to make
- 4 The registers are high-speed storage
- 5 Data contained in RAM is lost when
- 6 ROM memory can only be read:
 - a) areas within the CPU.
 - b) you can't make changes to it;
 - c) controls the way instructions are executed;
 - d) the computer is turned off;
 - e) coordinates the other parts of the computer;
 - f) calculations: add, subtract, multiply and divide.

8.2 Solve the clues and complete the puzzle with words from the opposite page.

1. Intel are used in many computers.
2. Teach 0 or 1 is called a bit, short for..... digit.
3. Special cards can be inserted into expansion
4. A controls the timing within the PC by sending signals to synchronize its circuits and operations.
5. The processor speed is measured in.....
6. carry signals between different parts of a PC.
7. cards improve the computer's performance .
8. The uses ROM to control the input/output of data.
9. The main printed circuit board is called the.....
10. The brain of a computer

8.3 Read this product description and answer the questions below

- 1 How fast is the CPU?
- 2 Which term is used to describe the CPU data bus?
- 3 How much RAM does the computer have?
- 4 Can you add extra RAM chips? How many?



8.4 Look at C opposite. Fill in the blanks with the correct unit of memory.

English



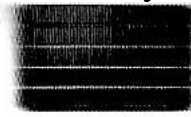
- 1 One
represents one character.



- 2 One
represents 1,024 characters (about a small page of text).



- 3 One
represents about one million characters (about the text of a small book).



- 4 One
represents about 1,000,000,000 characters (about 1,000 books).

- 5 One
represents about 1,000,000,000,000 characters (about one million books in a big library).

UNIT 9 Disks and drives

A Magnetic storage

Magnetic devices store data magnetically. A disk drive spins the disk at high speed and reads its data or writes new data onto it.

- A **floppy disk drive** uses 3.5 inch diskettes which can only hold 1.44 MB of data; it's often called A: drive and is relatively slow.
- Most PCs have one internal **hard disk**, usually called C: drive, which can hold several gigabytes of data. It's used to keep the operating system, the programs and the user's files easily available for use.

When you format a disk, or prepare it for use, its surface is divided into concentric circles called tracks. Each track is further divided into a number of sectors. The computer remembers where information is stored by noting the track and sector numbers in a directory.

The average time required for the read/write heads to move and find data is called access time; it is measured in milliseconds (ms). Don't confuse 'access time' with 'transfer rate', the rate of transmission of data from the disk to the CPU (e.g. 15 megabytes per second).

- A portable hard drive is an external unit with the drive mechanism and the media all in one sealed case. You can use it to make a backup, a spare copy of your files, or to transport data between computers.

B Optical storage

Optical drives use a laser to read and write data, so they are not affected by magnetic fields; but they are slower than hard drives. Modern DVD recorders accept all CD and DVD formats.

CDs (compact discs) can store up to 650-700 MB of data.

- **CD-ROMs** (read only memory) are 'read-only' units, so you cannot change data stored on them (e.g. a dictionary or a game).
- **CD-R** (recordable) discs are write-once devices which let you duplicate CDs
- **CD-RW** (rewritable) discs enable you to write onto them multiple sessions, like a hard disk.

DVDs (digital versatile discs) are similar in size to CDs (both are 1.2 mm thick), but they differ in structure and capacity. DVDs have more tracks and more pits (tiny holes) per track, and can store from 4.7 GB to 17 GB of data, movies, high-definition sound, etc., so they will probably replace CDs. DVD formats include:

- **DVD-ROM** (read-only memory)
- **DVD-R** or **DVD+R** (recordable only once)
- **DVD-RW** or **DVD+RW** (rewritable, so it can be erased and reused many times).

Portable DVD players let you watch movies or TV, play games and listen to music, wherever you are. They usually run on batteries, have a widescreen (rectangular 16:9 format) LCD and support multi-format playback, allowing you access to many file formats including DVD video, JPEG pictures, MP3 music, etc. They have two built-in stereo speakers, or headphones if you don't want to disturb other people.

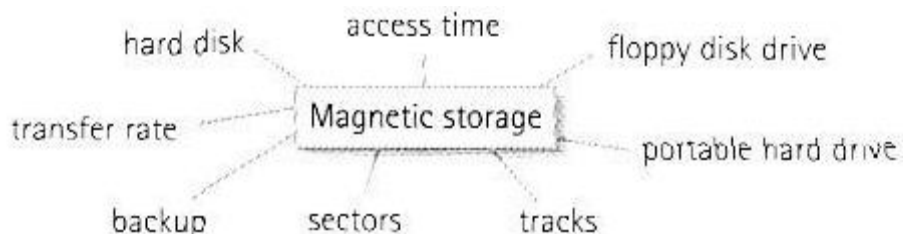
C Removable flash memory

Flash memory is solid-state, rewritable memory; it is non-volatile, so it retains data when the power is turned off. This explains its popularity in small devices.

- Flash memory cards such as CompactFlash or Secure Digital are found in cameras, PDAs and music players.
- Flash drives, also known as thumb or pen drives, are connected to a USB port of the computer. They let you save and transfer data easily.

EXERCISE

9.1 Read A opposite. Choose a term from this word web to complete the sentences below.



- 1 The first rule of data storage is to make a.....of all important files.
- 2 A.....is slower than a hard drive and can only hold 1.44 MB disks.
- 3 The.....inside your PC is made of aluminum alloy covered with a magnetic coating. This makes the disk itself a rigid plate, hence its name.
- 4 The.....are circles around a disk and the.....are segments within each circle.
- 5 This hard drive is a 60 GB IBM model with a fast.....of 8 ms.
- 6 The.....is the rate of transmission of data from the disk to the CPU. This is usually described in megabytes per second.
- 7 Apple's iPod music player can double as a.....for transporting computer data.

9.2 Look at the opposite page and find:

- 1 the CD and DVD formats that can be rewritten many times
- 2 the CD and DVD formats that can be written to by the user only once
- 3 the CD and DVD formats that can be read by a computer but not written to
- 4 the type of cards used in digital cameras
- 5 a type of drive that plugs into a USB port and lets you share photos and music with friends

6 the memory without moving parts; it is erasable, non-volatile and used in small devices

7 the expression that means to 'initialize a disk and prepare it to receive data

9.3 Complete this product description with words from B opposite.

The Panasonic DVD-LS91 is a top-of-the-range (1)..... , which provides pure entertainment wherever you go.

It has a big 9 inch built-in (2).....LCD, so you can really enjoy movies.

The built-in stereo speakers allow you to listen along, or if you want to listen alone, just plug in a pair of (3)..... This portable machine provides

(4)..... so you can play DVD Audio/Video, CD-R/RW, DVD-RAM, DivX and MP3 files. Its compact design features a built-in rechargeable 6 hour battery pack.

The DVD-LS91 allows 6 hours of playback, and provides a perfect way to entertain yourself and your kids during long trips.

You and computers

Which device or format would be most suitable for storing these things?

1 the operating system and the programs on a home computer

2 an electronic encyclopedia for children

3 a movie in digital format

4 the music tracks by your favorite artist

5 all the files generated by a company in one day

6 the photos taken with a digital camera

UNIT 10 Health and safety

A Computer ergonomics

There are a number of health and safety problems that may result from continuous use of computers.

- Typing constantly at high speed may provoke repetitive strain injury or RSI, which causes pain in the neck, arms, wrists, hands and fingers.

- Bad work postures and sitting in uncomfortable chairs may cause backache and stress.

- Looking at the screen for long periods of time, and lights reflecting off the screen, can cause headaches and eye strain, pain and fatigue of the eyes.

- Cathode Ray Tube monitors can emit electromagnetic radiation which can be dangerous to health.

The study of how people interact safely and efficiently with machines and their work conditions is called ergonomics. In computing, ergonomics is about designing computer facilities so they are safe and comfortable. Here are a few tips.

1 Get an adjustable chair so you can change its height and angle.

- 2 Make sure your feet rest firmly on the ground or on a foot rest.
- 3 Ensure you have enough leg room under the desk.
- 4 Put the monitor at eye level or just below.
- 6 Sit at arms' length from the monitor (40-80 cm). Don't sit near the sides or back of CRT monitors; or use LCD screens, which are free from radiation.
- 7 Use a document holder, in line with the screen, to reduce awkward neck and eye movements between the document and the screen.
- 8 Position the keyboard at the same height as your elbows, with your arms parallel to the work surface. Try to keep your wrists straight and flat when typing.
- 9 Take regular breaks from the computer and look away from the screen at regular intervals.

B Electronic rubbish

Irresponsible disposal of electronic waste, from old computers and mobile phones to hi-fi and video systems, can cause severe environmental and public health problems. For example, children or workers who come into contact with the toxic components of electronic products may suffer from skin and breathing problems.

- We should recycle or treat ICT equipment (e.g. plastics from mobiles could be used to make pens and rulers).
- Manufacturers should pay to finance recycling programs.

C The risks of using mobiles and in-car computers

Frequent use of mobile phones has been the cause of concern and there is ongoing research into whether radiation emitted causes health problems.

A serious risk is the use of mobiles and navigation systems in cars; this can distract the driver and cause accidents.

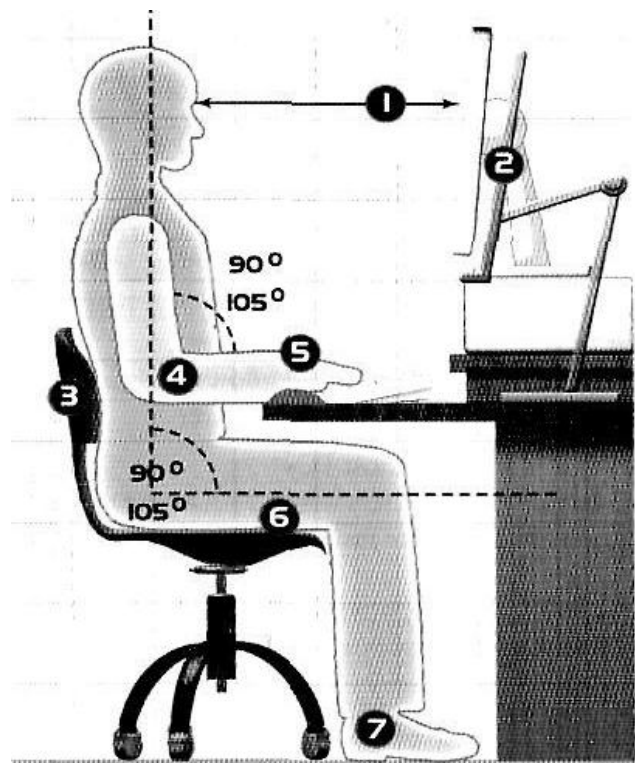
- Don't use your mobile while driving.
- Another health problem is Internet addiction, including obsessive game playing, gambling, etc.
- If you are an Internet addict, you should ask for help from specialists.

EXERCISE

10.1 Match the numbers in the picture to the correct tips in the checklist.

Tips for user-friendly workstation

- a) Consistent chair support for the lower back. Seat height and angle adjustable.
- b) Feet flat on the floor.



- c) Document holder beside the screen, at the same height and distance as the screen.
- d) Text on the screen in line with the eyes. Viewing distance at arm's length.
- e) Thighs horizontal, with feet on the floor. Adequate room for legs beneath the desk.
- f) Keyboard height at a comfortable open angle for the elbows and arms.
- g) Wrists and hands in a neutral position, in line with the forearms. Optional rest for wrists at the same height as the keyboard.

10.2 Complete the sentences with words from the opposite page.

1. Experts believe the best way to reduce musculoskeletal injuries is through – designing jobs to fit people instead of making people fit the job. It can mean everything from adjusting the height of a desk to buying a new chair or overhauling a production line.
2. The Safetype ergonomic keyboard may look strange, but its makers claim that it can prevent or RSI.
3. Visual problems, such as and irritation, are often reported by computer users. Causes of these problems include glare, poor lighting, and focusing the eyes on the screen for a prolonged period.
4. Some companies have begun to test ways to and dispose of For example, Epson Portland sponsored an electronics collection day this year on Earth Day.
5. Road safety campaigners say motorists using while driving are six times more likely to crash.
6. When a person is spending so much time on the Internet that their lives are affected negatively, they are suffering from

You and computers

Imagine you are designing an ICT classroom with 16 networked PCs, Internet access and peripherals. What safety precautions should be taken into account? Use these notes to help you write four tips or suggestions.

- 1 Room conditions (space, desks, chairs, lights and windows)
- 2 Ergonomic devices
- 3 Electrical safety: layout of cables and connectors, hotspots for a wireless network, etc.
- 4 Noticeboards and posters with health and safety recommendations

UNIT 11 Operating system and the GUI

A Types of software: the operating system (OS)

1 System software controls the basic functions of a computer, e.g. operating systems, programming software and utility programs.

2 Application software lets you do specific jobs such as writing letters, doing calculations, drawing or playing games. Examples are a word processor or a graphics package.

An operating system is a set of programs that control the hardware and allow people and applications to communicate with the hardware. Typical functions of the OS are handling input/output operations, running programs and organizing files on disks. The OS also gives access to networks and allows multitasking: a user can run several programs (and do various tasks) at a time. Examples are:

- the Windows family - designed by Microsoft and used on most PCs
- Mac OS - created by Apple and used on Macintosh computers
- Unix - found on mainframes and workstations in corporate installations, as it supports multi-users
- Linux - developed under the GNU General Public License; anyone can copy its source code, modify and redistribute it. It is used on PCs and in appliances and small devices.

B The Graphical User Interface

A GUI makes use of a WIMP environment: Windows, Icons, Menus and Pointer. This type of interface is user-friendly, where system functions are accessed by selecting self-explanatory icons (pictures representing programs or documents) and items from menus. A drop-down menu, or pull-down menu, is a list of options that appear below a menu bar when you click on an item.

The pointer is the arrow, controlled by the mouse, which lets you choose options from menus.

The background screen that displays icons, representing programs, files and folders (directories) is called the desktop. Double-clicking a folder icon opens a window which shows the programs, documents and other folders contained GUI within the folder.

C System utilities

These are small programs included with an OS that improve a system's performance. They can be desk accessories, device drivers, or system extensions activated when you turn on the PC.

- A crashed disk rescuer is used to restore disks and corrupted files.
- An accessibility program makes a PC easier for disabled users to use.
- A compression utility rewrites data so that it takes less space on disk.
- A media player lets you watch DVDs, play music and listen to the radio on the Web.

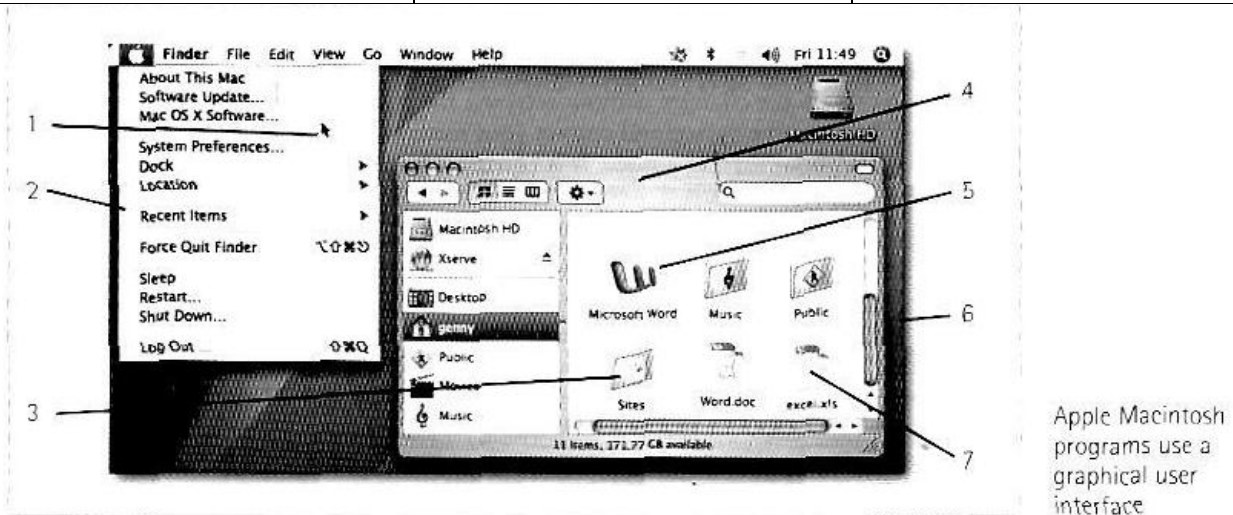
EXERCISE

11.1 Read A and B opposite and find the following.

- 1 the difference between system software and application software
- 2 software that enables users and programs to communicate with hardware
- 3 the meaning of 'multitasking'
- 4 a multi-user OS used on large, powerful computer systems
- 5 the operating system that is freely distributed
- 6 the operating system designed by Apple
- 7 the OS created by Microsoft
- 8 the meaning of WIMP in a graphical user interface (GUI)
- 9 the expression used to describe a system that is easy to use

11.2 Look at B opposite and then identify these interface elements.

desktop	window	drop-down menu
pointer	folder	program icon
document icon		



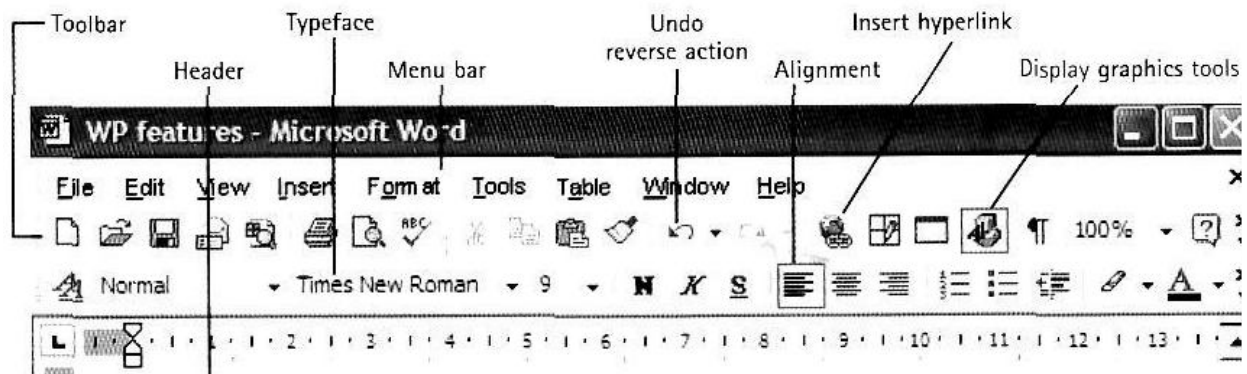
11.3 Look at C opposite. Which utility would you use to do these task?

- 1 to play and organize multimedia on your PC.
- 2 to diagnose and repair damaged disks.
- 3 to help computer users with sight, hearing or mobility difficulties.
- 4 to make files smaller, so you can send them with emails.

You and computers

- 1 Write a sentence explaining why Windows is so popular.
- 2 Look at the internet and find two operating systems designed for hand-held devices such as PDAs palmtops and Blackberries

UNIT 12 Word processing features



Word processing

A word processor enables you to create a document, store it electronically on a disk, display it on a screen, modify it by entering commands and characters from the keyboard, and print it on a printer.

The great advantage of word processing over using a typewriter is that you can make changes without retyping the entire document. If you make a typing mistake, you simply back up the cursor and correct your mistake. If you want to delete a paragraph you simply remove it, without leaving a trace. It is equally easy to insert a word, sentence or paragraph in the middle of a document.

Word processors usually support these features (and a few others)

- Cut and paste: allows you to remove (cut) a section of text and insert (paste) it somewhere else.
- Find and replace: allows you to direct the word processor to search for a particular word or phrase. You can also direct the word processor to replace one group of characters with another everywhere that the first group appears.
- Word wrap: the word processor automatically moves to the next line when you have filled one line with text, and it will readjust text if you change the margins.
- Print: allows you to send a document to a printer to get hard copy.
- Font specifications: allows you to change fonts within a document. For example, you can specify bold, italics, and underlining. Most word processors also let you change the font size and the typeface.
- Graphics: allows you to include illustrations and graphs in a document. Some programs let you create the illustrations within the word processor; others let you insert a picture from a different program.
- Headers, footers and page numbering: allows you to specify customized headers and footers that the word processor will put at the top and bottom of every page. The word processor automatically keeps track of page numbers so that the correct number appears on each page.
- Layout: allows you to specify different margins within a single document and to specify various methods for indenting paragraphs – how much space you leave between the margins and the paragraphs.

- Merge: allows you to merge text from one file into another file. This is particularly useful for generating many files that have the same format different data. Generating mailing labels is the classic example of using merges.

- Spell checker: a utility that allows you to check the spelling of words. It will highlight any words that it does not recognize.

- Thesaurus: allows you to search for synonyms without leaving the word processor.

The line dividing word processors from desktop publishing systems is constantly shifting. In general, thought, DTP applications support finer control over layout and more support for full- color documents.

EXERCISE

12.1 Match words from the opposite page with these definitions

1 a program used for preparing documents and letters

2 a row of words that open up menus when selected

3 the distinctive design of letters and characters, e.g. Arial, courier

4 text printed in the top margin

5 text printed in the bottom margin

6 the way text is arranged on the page, including margins, paragraph format, columns, etc.

7 a function that enables you to combine two files into one

12.2 Label these word processing icons with the correct function.

a cut and paste

b graphics

c align left

d undo

e insert hyperlink



1

2

3

4

5

12.3 Complete these statements with a term from A opposite.

1 A consist of the elements: typeface, type style and type size; for example Arial bold at 12 points.

2 Notice that when you get to the end of each line, Word starts a new line automatically. It moves the word you are typing to a new line when it enters an invisible margin running down the right-hand side of the screen. This feature is called

3 and lets you find a word and change it into another word throughout the text.

4 A good program can be used not only to rectify accidental spelling mistakes and typing errors, but also to speed typing input.

5 Many word processors include a, so you can look for words with similar meanings.

6 The contains a row of icons that perform particular actions when clicked.

7 a paragraph involves moving your writing in from the margins of the page. For example, a left indent is the distance between the left margin and the text.

You and computers

Type the letter or copy it from the website to your word processor. Then edit it by making these changes.

1) Use Times New Roman at 10 points

2) Insert this phrases in the correct places:

a) Yours sincerely

b) If you require any further information

c) Please find enclosed

d) Dear Mr. Vazquez

e) We would be pleased

3) Align the sender's address to the right

4) Insert this e-mail address below the fax number: mercury@tinyworld.co.uk

5) Change Cobra M2 to italic style and Mercury Warranty to bold style.

6) Insert a company logo and a picture of a robot: you can download them from the Web.

Виробничо-практичне видання

Методичні рекомендації
для практичної роботи
з курсу

«ІНОЗЕМНА МОВА ЗА ПРОФЕСІЙНИМ СПРЯМУВАННЯМ»

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